



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **AVIY4061A Perform aerobatic manoeuvres**

**Revision Number: 1**

## AVIY4061A Perform aerobatic manoeuvres

### Modification History

Not applicable.

### Unit Descriptor

#### Unit Descriptor

This unit involves the skills and knowledge required to perform looping, rolling and advanced aerobatic manoeuvres while remaining within the aircraft's structural and engine limitations and the pilot's physiological limitations during visual flight. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

### Application of the Unit

#### Application of the Unit

Work must be carried out in compliance with the relevant licence and aircraft rating requirements of the Civil Aviation Safety Authority (CASA) and/or ADF; airspace control requirements and Day Visual Flight Rules; and aircraft control principles, regulations, safety codes, protocols and procedures required to perform aerobatic manoeuvres.

Use for ADF Aviation is to be in accordance with relevant Defence Orders and Instructions and applicable CASA compliance.

Operations are conducted within a variety of operational contexts within the Australian aviation industry.

Work is performed under limited supervision.

This unit of competency is nominally packaged at Certificate IV.

### Licensing/Regulatory Information

Not applicable.

## **Pre-Requisites**

Not applicable.

## **Employability Skills Information**

**Employability Skills**                      This unit contains employability skills.

## **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1 Prepare for aerobatic manoeuvres</b>	1.1 Operating area within suitable airspace is selected that allows for the completion of all aerobatic manoeuvres above the authorised minimum altitude 1.2 Pre-manoeuve checks are performed and aircraft is configured for aerobatic manoeuvres 1.3 Lookout is maintained using a systematic scan technique at a rate determined by traffic density, visibility or terrain
<b>2 Perform looping manoeuvre</b>	2.1 Entry airspeed is achieved that will ensure completion of looping manoeuvre 2.2 Aircraft is pitched vertically through 360 degrees in balanced flight 2.3 Wings are maintained parallel to the earth's horizon whilst applying positive 'g', without stalling 2.4 Alignment with a nominated line feature is maintained 2.5 Engine, airframe and physiological limitations are complied with 2.6 Direction, altitude control and height loss is maintained within prescribed limits, or as appropriate to the aircraft type 2.7 Safe entry and recovery heights are observed 2.8 Exit airspeed/height is achieved at the completion of looping manoeuvre
<b>3 Perform rolling manoeuvre</b>	3.1 Entry airspeed is achieved that will ensure completion of rolling manoeuvre 3.2 Aircraft is rolled from a nominated airspeed around the fore and aft axis through 360 degrees 3.3 Direction, altitude control and height loss is maintained within prescribed limits, or as appropriate to the aircraft type 3.4 Engine, airframe and physiological limitations are complied with 3.5 Safe entry and recovery heights are observed
<b>4 Perform advanced aerobatic manoeuvre</b>	4.1 Entry speed for aerobatic manoeuvre is achieved 4.2 Control inputs are applied to achieve advanced aerobatic manoeuvre 4.3 Exit airspeed/height is achieved at the completion of an advanced aerobatic manoeuvre 4.4 Engine, airframe and physiological limitations are complied with 4.5 Direction, altitude control and height loss is maintained within prescribed limits, or as appropriate to the aircraft type

**ELEMENT**

**PERFORMANCE CRITERIA**

4.6 Safe entry and recovery heights are observed

## Required Skills and Knowledge

### REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

#### Required knowledge:

- Relevant sections of Civil Aviation Safety Regulations and Civil Aviation Orders
- In Defence context, relevant Defence Orders and Instructions
- Relevant OH&S and environmental protection procedures and regulations
- Aerodynamic principles for performance of aerobatic manoeuvres
- Techniques for entry to and control of aerobatic manoeuvres
- Physiological effects applicable to max performance flight
- Aircraft limitations for the aircraft flown including environmental factors
- Safe manoeuvre entry and recovery heights
- Pre-manoevre check procedures
- Regulatory requirements applicable to the performance of aerobatic manoeuvres

#### Required skills:

- Apply unusual attitudes, fully developed and incipient spin and spiral dive recover techniques
- Operate the aircraft within its limitations, achieving optimum performance
- Manoeuvre aircraft on the buffet
- Conduct maximum rate turning
- Compensate for the secondary effects of controls
- Identify symptoms of loss of control
- Select and correctly use relevant equipment in performance of aerobatic manoeuvres
- Use instruments to monitor aircraft performance
- Recognise approaching max performance limitations of the aircraft
- Manage aircraft energy to achieve safe manoeuvre entry and recovery heights
- Communicate effectively with others when performing aerobatic manoeuvres
- Read, interpret and follow instructions, regulations, procedures and other information relevant to performing aerobatic manoeuvres in an aircraft
- Complete documentation related to performing aerobatic manoeuvres
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when performing aerobatic manoeuvres
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems that may occur when performing aerobatic manoeuvres in accordance with regulatory requirements and workplace procedures

**REQUIRED KNOWLEDGE AND SKILLS**

- Implement contingency plans for unexpected events that may arise when performing aerobic manoeuvres
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during the performance of aerobic manoeuvres
- Monitor and anticipate operational problems and hazards and take appropriate action
- Monitor work activities in terms of planned schedule
- Modify activities dependent on differing workplace contingencies, situations and environments
- Work systematically with required attention to detail without injury to self, others or damage to goods or equipment
- Adapt to differences in equipment and operating environment in accordance with standard operating procedures
- Select and use required personal protective clothing and equipment conforming to industry and OH&S standards
- Implement OH&S procedures and relevant regulations

# Evidence Guide

## EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

### **Critical aspects for assessment and evidence required to demonstrate competency in this unit**

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of:
  - applying the underpinning knowledge and skills
  - following relevant legislation and workplace procedures
  - selecting operating area within suitable airspace that allows for the completion of all aerobatic manoeuvres above the authorised minimum altitude
  - performing pre-manoeuve checks and configuration of aircraft for aerobatic manoeuvres
  - maintaining lookout using appropriate systematic scan technique
  - achieving entry airspeed for completion of all aerobatic manoeuvres
  - observing safe entry and recovery heights for all aerobatic manoeuvres

### **Context of and specific resources for assessment**

- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
  - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
  - access to an appropriate range of relevant operational situations in the workplace
  - In both real and simulated environments, access is required to:
    - relevant and appropriate materials and equipment, and
    - applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

### **Method of assessment**

- Assessment of this unit must be undertaken by a registered training organisation
- As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
- Practical assessment must occur:
  - through activities in an appropriately simulated environment at the registered training organisation, and/or



## **EVIDENCE GUIDE**

- in an appropriate range of situations in the workplace

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

- Tasks may be undertaken in:
- Variable weather conditions in accordance with Day Visual Flight Rules (VFR)
- Performance may be demonstrated in:
- single engine aircraft
  - multi engine aircraft
  - variable air traffic conditions
  - variable flight situations
  - abnormal situations
  - classes of airspace as designated by the Civil Aviation Safety Authority
- Aircraft may include:
- fixed wing
  - helicopter
  - other commercial or military aircraft
- Crew may include:
- single pilot
  - multi crew
- Instruments may include:
- fitted flight instruments
  - heads up display
- Limitations may be imposed by:
- local noise abatement requirements and curfews
  - airspace endorsements
- Rolling manoeuvre may include:
- barrel rolls
  - aileron roll
  - slow rolls
- Advance aerobatic manoeuvres may include:
- spin
  - incipient spin
  - porteous loop
  - wing-over
  - cuban eight
  - roll off the top
  - split S
  - vertical eight
  - lazy eight
  - derry turn
  - stall turn
  - slow loop
  - flick (snap) rolls
  - hesitation roll
- Dependent on the type of
- company procedures

## RANGE STATEMENT

organisation concerned and the local terminology used, workplace procedures may be referred to as:

Information/documents may include:

Applicable regulations and legislation may include:

Performance includes tolerances specified in either of:

- enterprise procedures
- organisational procedures
- established procedures
- standard operating procedures
- relevant sections of Civil Aviation Safety Regulations and Civil Aviation Orders
- in Defence context, relevant Defence Orders and Instructions
- Flight Manual/Pilot's Operating Handbook (POH)
- Manual of Standards - Pilot Licensing (MOS-PL)
- Aeronautical Information Publication (AIP)
- En Route Supplement Australia (ERSA)
- relevant sections of the Civil Aviation Advisory Publications (CAAP)
- charts
- operations manuals
- approved checklists
- workplace procedures and instructions and job specification
- induction and training materials
- conditions of service, legislation and industrial agreements including workplace agreements and awards
- relevant Bureau of Meteorology, International Civil Aviation Organization (ICAO) and/or World Meteorology Organization (WMO) publications
- relevant Civil Aviation Safety Regulations and Civil Aviation Orders
- in Defence context, relevant Defence Orders and Instructions
- relevant state/territory OH&S legislation
- relevant state/territory environmental protection legislation
- relevant Australian Standards
- relevant licence and aircraft requirements of the Civil Aviation Safety Authority (CASA) such as:
  - Day VFR syllabus
  - Manual of Standards
  - Relevant defence documentation such as:
    - Defence Orders and Instructions
    - Approved curricula and training documentation

## **Unit Sector(s)**

Not applicable.

## **Competency field**

**Competency Field**                    Y - Aircraft Operation and Traffic Management